D. Webster writes on EPA/NPDES Web Page 8/20/2014

Merrimack Station Draft NPDES Permit

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Comments Received in Response to the Revised Draft Permit for Merrimack Station

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- Utility Water Act Group Comments on Revised Draft Permit for the Merrimack Station (PDF) (65 pp, 1.6 MB) — 65
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Please note that the initial public comment period for the Revised Draft Permit for Merrimack Station was extended an additional 60 days from June 17, 2014 to **August 18, 2014**. All persons, including applicants, who believe any condition of the Revised Draft Permit is inappropriate, must raise all issues and submit all available arguments and all supporting material for their arguments in full by **August 18, 2014**, to the address listed below. In addition, Region 1 extended the **additional 35-day comment period by 30 more days during which any interested person may file a written response to the material filed by any other person**. This additional comment period begins **August 18, 2014 and ends October 22, 2014**. Public comments will be added to the Administrative Record in a timely manner to allow for review and response during the additional 65 -day period.

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The Draft Permit for Merrimack Station that was issued September 30, 2011, addressed wastewater discharges from several different aspects of the power plant's operations. One important part of the permit set limits for potential wastewater discharges from the facility's flue gas desulfurization (FGD) air pollution control system. The Draft Permit set limits for this wastewater based on the use of the Station's proposed "primary treatment system" for FGD wastewater, plus the addition of a biological treatment stage. Since issuance of the Draft Permit, Region 1 learned that PSNH had, of its own accord, installed and begun operating not only the primary

treatment system, but also an FGD secondary wastewater treatment system (SWWTS) consisting of a falling-film evaporator (or brine concentrator) and forced circulation crystallizers capable of operating as a zero liquid discharge (ZLD) system. Region 1 also received a number of comments on the suitability of VCE for Merrimack Station during the 2011 Draft Permit public comment period and has gathered additional information in response to those comments. After considering all this material in connection with an evaluation of the Best Available Technology (BAT) factors specified in the statute and regulations, Region 1 has concluded on a site-specific basis, based on its Best Professional Judgment (BPJ), that the combined primary and secondary FGD WWTS currently operating at the Facility is the BAT for treating the FGD wastewater generated at Merrimack Station.

The particular provisions of the September 2011 Draft Permit now being reconsidered and revised are the effluent limits and reporting requirements for Outfall 003C at Part I.A.4 and for Outfall 003A at Part I.A.2. Region 1 has prepared a Revised Draft Permit and Fact Sheet that includes certain changes to these provisions from the September 30, 2011, Draft Permit. In addition, the Region has compiled the administrative record associated with this action, which is available at the link near the bottom of this page. (Please note that records after #840 have been added since the Draft Permit was issued September 30, 2011). The Agency is now seeking comment on the Revised Draft Permit provisions as well as on Region 1's analysis supporting the revisions. The Region is providing a two-stage comment period. The first stage is an initial 60 day comment period. The second stage is an added 35 days in order that any interested person may file a written response to the material filed by any other person.

- Revised Draft Permit (PDF) (pp 1-29 of 88 pp, 1.8 MB)
- Revised Draft Permit Fact Sheet (PDF) (pp 30-86 of 88 pp, 1.8 MB)
- Revised Draft Permit Public Notice (PDF) (pp 87-88 of 88 pp, 1.8 MB)

Background: EPA and the New Hampshire Department of Environmental Services (NHDES) have issued a new Draft National Pollutant Discharge Elimination System (NPDES) permit for the Merrimack Station power plant in Bow, New Hampshire. The agencies have designed the permit to meet the requirements of federal and state water pollution control laws. Important permit conditions include those addressing the facility's discharges of waste heat to the Merrimack River, its withdrawals of river water for plant cooling needs, and its discharges to the river of mercury, arsenic, selenium and other pollutants.

Merrimack Station is a 470 megawatt (MW), predominantly coal-fired, electrical generation facility owned and operated by Public Service of New Hampshire (PSNH), a corporate subsidiary of The Northeast Utilities System. The facility takes up to 287 million gallons of water per day (MGD) from the Hooksett Pool section of the Merrimack River to use for cooling in its process for generating electricity. The facility also discharges waste heat and other pollutants to the river. More specifically, Merrimack Station burns coal in its boilers to generate steam to drive its electrical generating turbines. It also takes water from the Merrimack River through two intake structures and uses it to condense the steam back to water (i.e., for cooling) so that more steam and electricity can be generated. In the process of condensing steam, the river water absorbs the facility's steam turbine waste heat. This water, carrying the facility's waste heat, is then discharged back to the Hooksett Pool.

This type of cooling system is referred to as an "open-cycle" (or "once-through") system because the water is used for only one cooling cycle before it is discharged to the river. This type of system tends to maximize both the amount of water that must be taken from a water body for cooling and the amount of waste heat discharged to the receiving water. As an alternative to open-cycle systems, closed-cycle cooling systems include technology to chill heated condenser cooling water so that it can be *recycled* for additional cooling cycles. As a result, closed-cycle systems tend to minimize water withdrawals for condensing steam *and* discharges of waste heat.

By raising water temperatures, discharges of heat to a water body (i.e., "thermal discharges") can harm aquatic organisms in many ways. EPA's analysis finds that Merrimack Station's thermal discharges have, indeed, harmed fish in the Hooksett Pool. Data indicates that thermal discharges have contributed to the alteration and depletion of fish populations in the Pool over the last 20 to 30 years. Making matters worse, fish are also killed and injured by the facility's withdrawals of river water for its cooling needs. The water taken from the river contains fish eggs and larvae and these tiny creatures are pulled through the facility's cooling system and killed by exposure to harsh physical impacts, extreme water temperatures and toxic chemicals. This "entrainment" of fish eggs and larvae is a problem from April through August of each year at Merrimack Station because this is the primary period when fish eggs and larvae are found in the Hookset Pool. In addition, withdrawals of river water create a water velocity at the intake pipes that can trap (or "impinge") juvenile and adult fish against the facility's intake screens. The fish caught on the screens may be killed or injured and "impingement" is a year-round concern at Merrimack Station.

Another important issue addressed by the new draft permit is the wastewater discharge expected from Merrimack Station's recently constructed wet flue gas desulfurization (FGD) scrubber system. The wet FGD scrubber system will reduce the facility's emission of air pollutants, such as mercury and sulfur dioxide, but it will also generate a wastewater containing many of these same pollutants. Thus, the discharge of FGD wastewater must be properly controlled.

EPA and the NHDES last reissued Merrimack Station's NPDES permit (Permit No. NH0001465) on June 25, 1992. Originally scheduled to expire on July 27, 1997, the permit has been administratively continued in effect pending reissuance of a new permit.

Major Permit Conditions: Consistent with the requirements of the Clean Water Act, EPA and NHDES have designed the following key permit conditions:

- **Reduced Thermal Discharges:** EPA has found that Merrimack Station's thermal discharges have contributed to the deterioration of fish populations in the Hooksett Pool. In addition, EPA has determined that upgrading Merrimack Station's decades-old open-cycle cooling system to a closed-cycle system is the best available technology for reducing the facility's discharges of waste heat. Therefore, the Draft Permit includes monthly and yearly limits on the amount of heat that Merrimack Station can discharge to the Hooksett Pool based on the levels achievable by a closed-cycle cooling system. These limits apply year-round and would reduce the facility's thermal discharges by 99.6%.
- **Reduced withdrawals of river water:** EPA has determined that converting Merrimack Station's cooling system from an open-cycle system to a closed-cycle system is also the best technology available for

minimizing mortality to fish eggs and larvae from *entrainment* by Merrimack Station's cooling system. Due to seasonal spawning patterns, however, eggs and larvae are present in the Hooksett Pool only from April to August. Therefore, EPA is proposing limits on the facility's water withdrawals based on the use of closed-cycle cooling, but these limits only apply only during the April to August period. The intake flow limits for the rest of the year would allow water withdrawals compatible with open-cycle cooling. (By contrast, the Draft Permit's thermal discharge limits are based on the *year-round* use of closed-cycle cooling.)

- **Improved Fish Return System:** To reduce fish mortality from *impingement*, the Draft Permit specifies that Merrimack Station's cooling water intake structures must be modified to include low pressure spray washes for gently removing impinged fish from the intake screens, a new "fish return system" to safely return impinged fish to the river, and operational controls to reduce exposure of impinged fish to chlorine.
- **Controls on Other Internal Wastewater Streams:** The new Draft Permit also includes limits to control the discharge of pollutants in wastewater from the wet FGD scrubber system and various other sources at the facility, such as from metal cleaning operations.

Public Comment: EPA has placed Merrimack Station's Draft Permit on Public Notice from September 30 to November 30, 2011. During the Public Notice period any individual, agency, organization, etc., can submit written comments on the Draft Permit to EPA Region 1. EPA will consider and respond in writing to all timely, significant comments. Summaries of all comments received and EPA's responses to them will be posted at www.epa.gov/region1/npdes/merrimackstation/. EPA will also host a Public Hearing scheduled for November 3, 2011, at NH Dept. of Environmental Services headquarters auditorium starting at 6:30 p.m.

- 2011 Draft Permit (PDF) (29 pp, 328 K) **(Note: Corrections on pages 6-7)**
  - Attachment A - Freshwater Chronic and Modified Acute Toxicity Test Protocol (PDF) (7 pp, 49 K)
  - Attachment B - Monitoring Location Map (PDF) (1 pg, 244 K)
  - Part II Standard Condition (PDF) (25 pp, 142 K)
- 2011 Fact Sheet (PDF) (60 pp, 385 K) **(Note: Corrections on pages 12, 33, and 34)**
  - Attachment A: Map Location of Merrimack Station (PDF) (1 pg, 351 K)
  - Attachment B: Map Location of Outfalls (PDF) (1 pg, 436 K)
  - Attachment C: Merrimack Station Schematic of Water Flow (PDF) (1 pg, 813 K)
  - Attachment D: Clean Water Act NPDES Permitting Determinations for the Thermal Discharge and Cooling Water Intake Structures at Merrimack Station in Bow, New Hampshire (PDF) (391 pp, 2.2 MB)
    - Appendix A: Measured Daily Maximum, Minimum and Mean Water Temperature at Monitoring Station N-10, S-0 and S-4 at Merrimack Station (PDF) (7 pp, 154 K)
  - Attachment E: Determination of Technology-Based Effluent Limits for the Flue Gas Desulfurization Wastewater at Merrimack Station in Bow, New Hampshire (PDF) (52 pp, 555 K)
  - Attachment F: Discharge Monitoring Report Summary Janaury 2005 - December 2010 (PDF) (11 pp, 242 K)
- Administrative Record
- Comments Received During the Public Notice Period for the 2011 Draft Permit
- Public Hearing
  - Information Brief (PDF) (15 pp, 574 K)
  - Transcript (PDF) (51 pp, 143 K)
- News Release: Updated Clean Water Discharge Permit for Merrimack Station in Bow, N.H. Issued for Review

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Last updated on Wednesday, August 20, 2014